

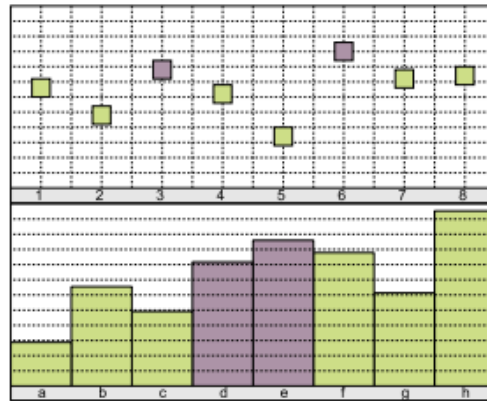
View Combo

INSPIRATIONS

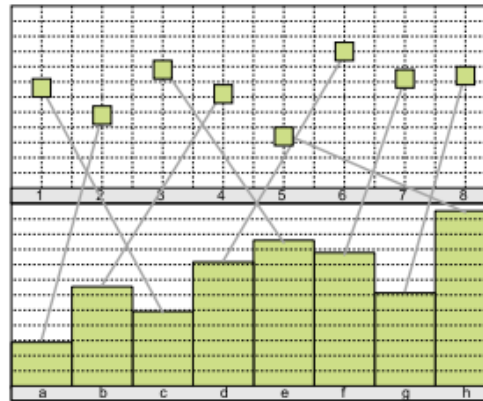
1. The Design Space of Composite Visualization

- Juxtaposition(并列) - Juxtaposed Views
 - Placing visualizations side-by-side in one view
 - Examples: Jigsaw
- Superimposition(重叠) - Superimposed Views
 - Overlaying two visualizations in a single view;
 - Examples: Mapgets, GeoSpace
- Overloading(穿插) - Overloaded Views
 - Utilizing the space of one visualization for another;
 - Examples: Scatter Plots in Parallel Coordinates
- Nesting(嵌入) - Nested Views
 - Nesting the contents of one visualization inside another visualization.
 - Examples: NodeTrix
- Integration(用线关联) - Integrated Views
 - Placing visualizations in the same view with visual links.
 - Examples: Semantic Substrates, VisLink

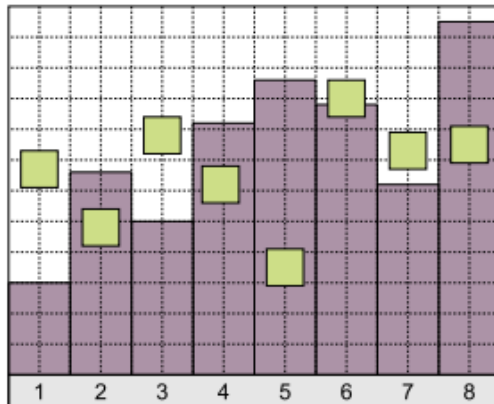
Examples of composing a scatterplot and bar graph



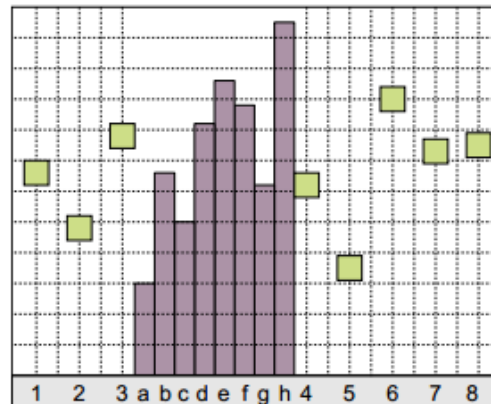
(a) Juxtaposed views.



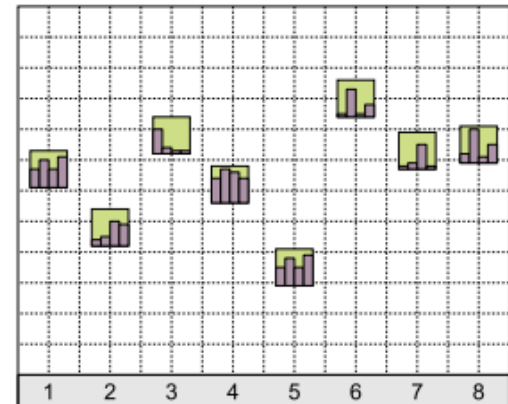
(b) Integrated views.



(c) Superimposed views.



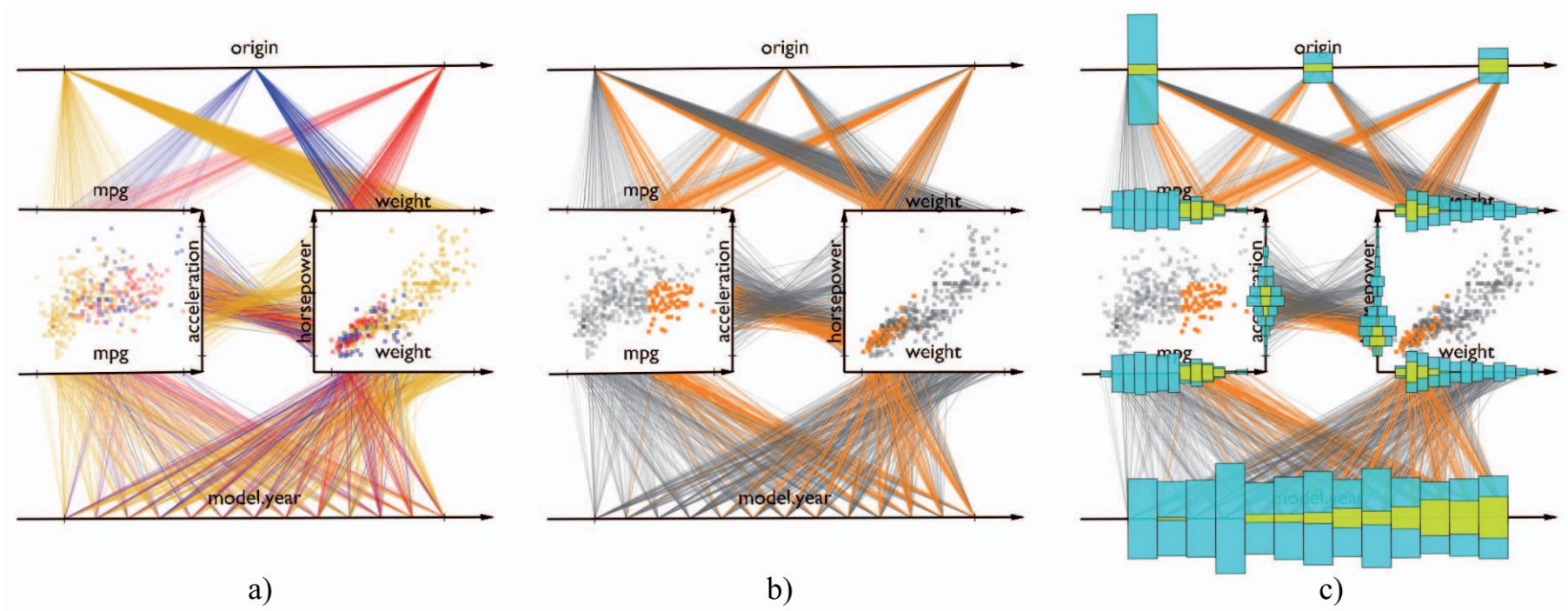
(d) Overloaded views.



(e) Nested views.

Application of Composite Visualization

---- Flexible Parallel Coordinates



2. Image-based modeling

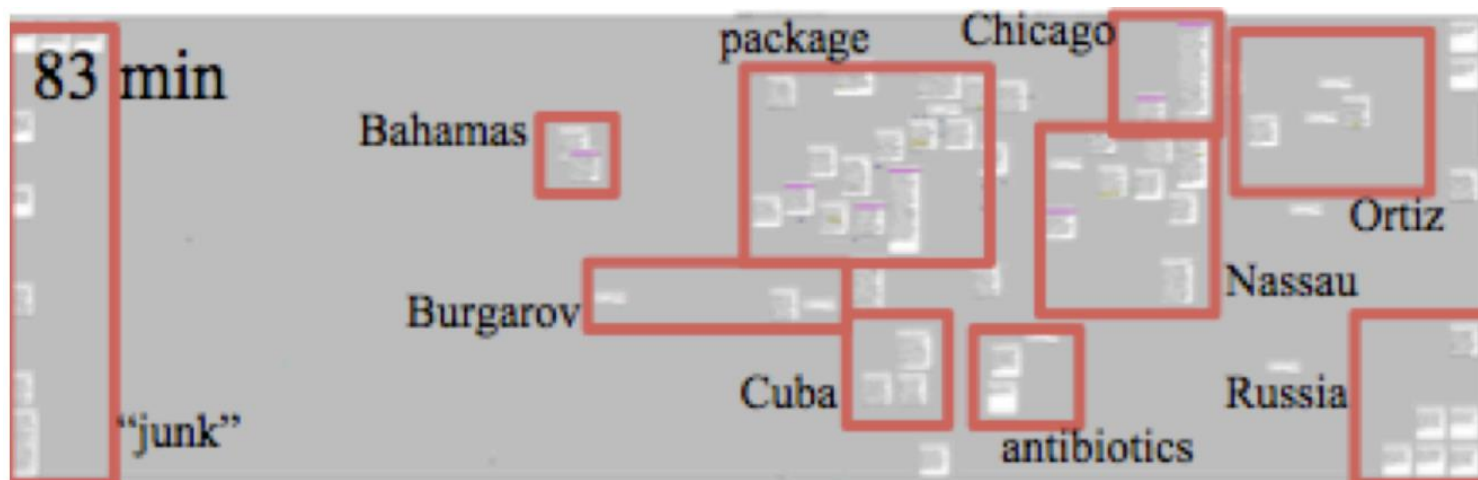
- Techniques
 - Image caching
 - Image Warping
 - Panorama
 - Lumigraph
 - View Morphing

Looking at the object with different

- Movement
- Geometry
- Lighting

3. Visual Reasoning

- Layout reflects users' behavior, and their understanding of the underlying dataset



Semantic Interaction for Sensemaking: Inferring Analytical Reasoning for Model Steering

http://www.endert.org/resources/Endert_TVCG2012_.pdf

OUR IDEA OF DATA PANORAMA

IDEA: semi-auto generation of data Panorama

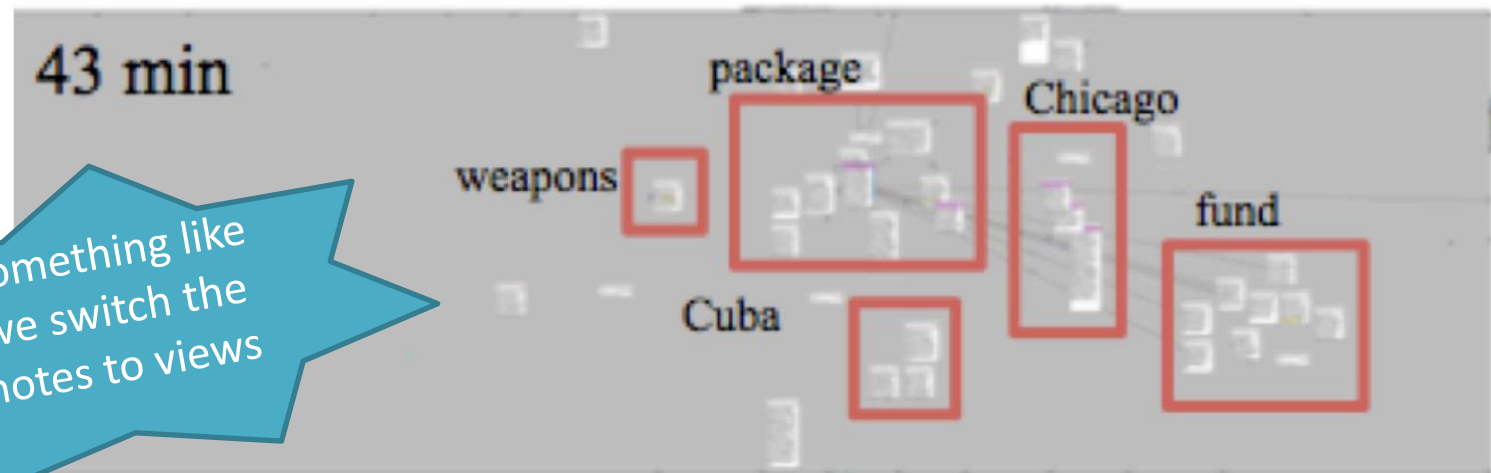
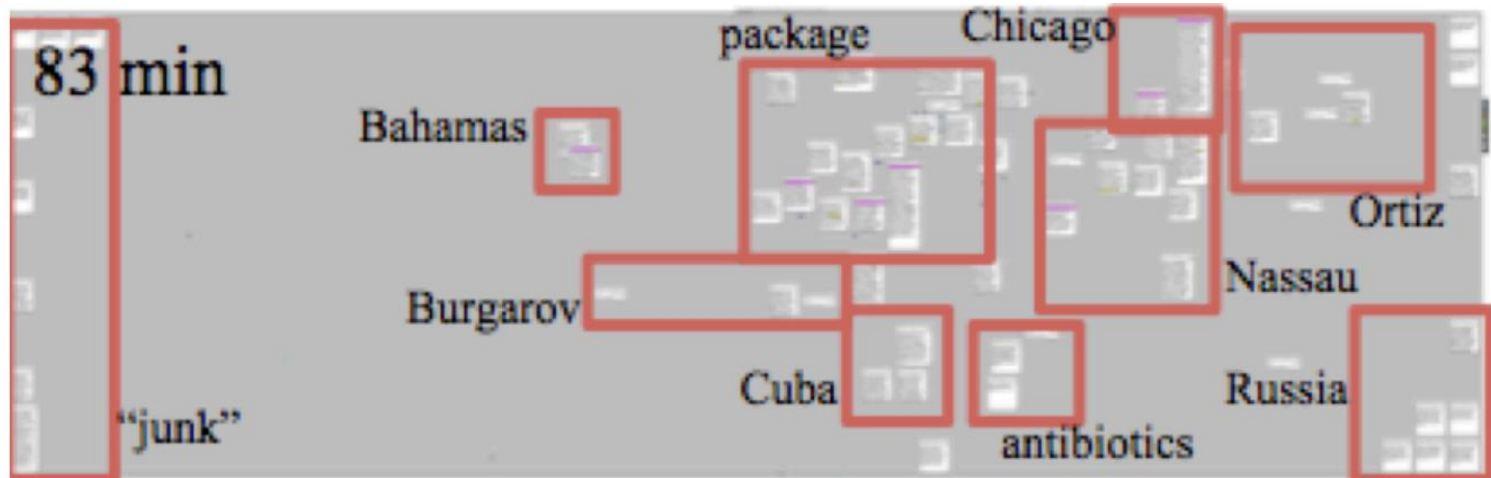
- DATA MODELING
 - With the user selection of a single view as a **focus view**, all potentially related views would be generated automatically as **context views** and aligned with flexible layout (orthogonal node-link or more complex composition)
- DATA CACHE
 - **Database or preprocessing** is generated so that the most important or most time-consuming data is prepared for use.
- DATA CALIBRATION
 - User can **pin** two context views to maintain the connections or **swap** context views to change the connections
- DATA MOVEMENT
 - Swapping a focus view results in MOVEMENT (refresh context views with the current focus view), with pinned views maintained
- Users can make **annotations**, **visual links** on the views

Focus/Context Views Can Be ...

- 2-Dimension Combo Views (multiple available layouts)
- Statistical views
- Aggregated/Segmented Views
- Map views
- Other Layouts

Interactions

- Pin/Unpin a view
- Annotate
- Visual link
- Panning
- Zooming
- Collapsing (to note)/expand (to view)



Something like
we switch the
notes to views

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Introduction to Teaching Text



Something like
we switch the
PPTs to views

Interactive Perzi PowerPoint

<http://prezi.com/2dajp63ozbgm/introduction-to-teaching-text/>

Pipeline: Create An Global View with Visual Reasoning

- Swapping current view
 - \rightarrow switch focus \rightarrow switch context
 - Just like switching center node in radial layout
 - E.g. if you make the centric view average count of an dimension, other views would include standard deviation, histogram, etc.
- Exchange layout or statistical metrics
- Change viewpoint (highlighting)

Implementation

- Issues to concern
 - Integrated data model
 - Fast query (preprocessing needed)
 - Minimize the data sent to web page
- Framework
 - Canvas-based web programming
 - Django web framework
 - Python libraries: Numpy, Pandas, ...
 - Column-oriented Database: MonetDB

Current Progress

- Done
 - Refactoring the project
 - Test canvas library **iVank**
- To do
 - Node-link layout with canvas (each node is a view)
 - Data modeling